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**Bureau of Labor Statistics**  
**Office of Productivity and Technology**  
**1998 HOURS AT WORK SURVEY**

Based on the 1998 hours at work survey (HWS) of establishments, ratios of hours at work to hours paid and their changes from the previous year (with standard errors in parentheses) were:

	<b>1998 Ratios of hours at work to hours paid</b>	<b>Changes in Ratios from 1997 to 1998</b>
<b>Nonfarm Establishments</b>	0.934 (.003)	0.000 (.004)
<b>Manufacturing(Mfg.)</b>	0.912 (.002)	-0.005 (.002)
<b>Durable Mfg.</b>	0.911 (.002)	-0.003 (.003)
<b>Nondurable Mfg.</b>	0.913 (.003)	-0.008 (.003)
<b>Nonmanufacturing</b>	0.939 (.004)	0.000 (.005)

The hours at work survey is used to construct ratios of hours at work to hours paid for production and non-supervisory workers for each of the major industrial sectors of the nonagricultural economy on an annual basis. The Bureau of Labor Statistics (BLS) of the U. S. Department of Labor has been conducting this survey since 1981 for use in measuring productivity.

**Background**

Data on average weekly hours collected by the BLS Current Employment Statistics Program (CES) represent hours paid. Hours paid include paid leave for holidays, vacations, sick, and personal or administrative leave (e.g. personal business, funeral leave, and jury duty). These forms of paid leave represent time not devoted to production. Hours at work exclude paid leave while hours paid do not. Productivity is better measured as the ratio of output to hours spent in production.

The HWS survey is used to develop *ratios of hours at work to hours paid* for 29 industries detailed industries. These ratios are then used to convert measures from the CES of hours paid

for nonagricultural production and non-supervisory employees to measures of hours at work. All historical data for labor productivity are measured as the ratio of output to hours at work. The historical series are based on HWS results and other BLS data sources (see Hours at Work: A new base for BLS Productivity Statistics, Monthly Labor Review, February 1990).

## Survey Results

The average annual ratio of hours at work to hours paid (HW/HP) in non-farm establishments remained unchanged from last year's ratio of 0.934. The ratio for non-farm establishments has varied without trend between 0.925 and 0.938 since 1983 (see Table 1). The HW/HP ratio declined 0.5% to 0.912 in the manufacturing sector in 1998, but no long term trend in the ratio is discernible. The HW/HP ratio fell in both the durable and non-durable goods sectors, although most of the decline was confined to the non-durable goods sector which fell to 0.913, the lowest level ever recorded by the HWS survey. The ratio was also unchanged in non-manufacturing industries which account for almost 80 percent of 1998 nonfarm business sector employees. The HW/HP ratio can be used to define the paid leave rate,  $(1.0 - \text{hours at work ratio}) * 100\%$ , which continues to be higher in manufacturing industries (8.8% vs. 6.1%). (See also Chart 1).

As seen in Table 2, the pattern of changes in the HW/HP ratios for detailed industries was mixed, which is consistent with no change in the aggregate ratio. Of the 29 categories of non-agricultural establishments (20 manufacturing and 9 nonmanufacturing), sixteen industries (11 manufacturing and 5 nonmanufacturing) registered declines, while eleven (7 manufacturing and 4 nonmanufacturing) posted gains. Two industries from manufacturing (1 durable and 1 nondurable) remained unchanged. Five industries in manufacturing (primary metals, transportation equipment, food and kindred products, apparel and other textiles, printing and publishing) and 2 in nonmanufacturing (electric, gas and sanitary services and retail trade) declined more than 1 percent. Comparable increases occurred in only 3 industries (electrical equipment within manufacturing and wholesale trade and services in non-manufacturing).

The hours at work survey (HWS) is based on a sample of about 5,500 establishments. Because it is a sample survey, ratios are subject to sampling errors. For the first fourteen years of the survey, the hours at work survey achieved at least a 75 percent response rate. However, response rates have dropped sharply the last four years. Since the redesign in 1996, the collection criteria for the computer assisted telephone interviews are more stringent and the response rate has fallen further despite new collection methods designed to improve survey response. In 1998 the response rate was only 50 percent. As a result, the variances of the estimates, particularly at the detailed industry level, were higher than in earlier years. The increased variances have made it slightly more difficult to determine that changes in the ratios were significant. In electrical equipment, for example, the ratio fell from 0.915 in 1996 to 0.898 in 1997. However, the standard error is relatively large making the change in the HWS ratio statistically insignificant.

In addition, the low response rates increase the likelihood that responding establishments are not representative of the entire industry or sector. For example, it could be the case that only those establishments that can most easily comply with the survey requests have responded. These establishments may be better able to respond because their records are computerized. It may be that the likelihood that a establishment responds is correlated to the amount of paid leave offered to its employees. If so, the survey responses could be unrepresentative of nonfarm establishments and the reported ratios could be biased. A bias that originates in this fashion is referred to as “non-response bias”.

The risk of non-response bias is minimized by maintaining a high overall response rate. The continued decline in the HWS response rate from 75 percent in 1994 to 50 percent in 1998 should give users of these data reason for caution. Because of added variance of the 1995-8 HWS surveys as well as the added risk of non-response bias, it may be preferable to average the 1997 and 1998 survey results especially if the primary focus is on the level of the ratios rather than on changes in the ratios.

For more information about the hours at work survey (HWS), please contact Aklilu A. Zegeye, U.S. Department of Labor, Bureau of Labor Statistics, Division of Productivity Research at (202) 691-5611.